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ABSTRACT

This competency-based horticulture curriculum guide is designed to provide secondary and postsecondary horticulture teachers with a task-oriented program for training turfgrass maintenance workers. It contains a master resource list, a listing of turfgrass maintenance resources available from various states, and 59 competency task sheets organized into 11 competency areas. These areas are equipment operation and maintenance; general turfgrass maintenance; maintenance of trees and shrubs; maintenance of greens and trees; maintenance of fairways, roughs, and traps; maintenance of water hazards; maintenance of facilities; ground preparation; propagation and growth; harvesting; and maintenance. A task statement, a performance objective, suggested learning activities, evaluation procedures, selected resources, and a performance guide are provided in each competency task sheet. Instructor checklists designed to help instructors determine acceptable levels of student performance are also included in the units. (Related competency-based horticulture curriculum guides in the areas of gardening/groundskeeping and floriculture are available separately through ERIC--see note.) (MN)

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CE 029327

ED203167

Competency-Based Horticulture: Turfgrass Maintenance Worker

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Adult,
Vocational and
Technical Education

Research and
Development Section

June, 1981

U.S. DEPARTMENT OF HEALTH
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FOREWORD

The Illinois State Board of Education is committed to assisting local communities in the development of quality instructional programs to prepare persons for occupations in Ornamental Horticulture. This 'Competency-Based Horticulture: Turfgrass Maintenance Worker' curriculum guide is designed to provide the secondary and post-secondary horticulture teacher with a task oriented program in Turfgrass Maintenance Worker. It is one in a series of three guides which includes Gardening-Groundskeeping and Floriculture. Each competency-based guide includes a variety of enabling activities, resources and evaluation strategies so that teachers may choose those which best serve their teaching methods and their students' learning styles.

This guide was developed using a process which includes validation of the Vocational-Technical Education Consortium of States (V-TECS) tasks by members of the Illinois Horticulture Industry. These tasks were validated and revised to reflect job duties performed in Turfgrass Maintenance Worker occupations in Illinois. Teaching and evaluation strategies and resources were then identified for each task. The guide was field tested in nine Illinois schools and critiqued by other Illinois horticulture teachers.

Sincere appreciation is extended to all horticulture industry and teaching personnel who assisted in the development of this curriculum guide. Recognition is given to the following individuals for their outstanding contribution: Ms. Susan E. Bates, Project Director; Dr. Robert G. Huntley, Initial Project Director; Mr. Jesse Felix, Advisory Council Member; Mr. David James, Advisory Council Member; Mr. Timothy Kelly, Advisory Council Member; Mr. Harry Lavero, Advisory Council Member; Ms. Cathy Martin, Advisory Council Member; Mr. Phillip Brown, Field Test Teacher; Ms. Alice Dries, Field Test Teacher; Mr. Robert Mills, Field Test Teacher; Mr. James Morrison, Field Test Teacher; Mr. Samuel Ochs, Field Test Teacher; Ms. Amy Swigart, Field Test Teacher; Mr. Dennis Toren, Field Test Teacher.

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Illinois State Board of Education

Department of Adult, Vocational and Technical Education
Research and Development Section

Product Abstract

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   - ____ 10 Industrial Art Education
   - ____ 16 Technical Education
   - ____ 17 Trade and Industrial Education
   - ____ 22 Cooperative Education
   - ____ Career Education
   - ____ Other (Specify) ____

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   - ____ 7-8
   - X 9-10
   - X 11-12
   - X Post-Secondary
   - ____ Adult
   - ____ Teacher (Pre-service)
   - ____ Administrator (Pre-Service)
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16. General Description (State the general objective and suggested method of use. Summarize the content and tell how it is organized. Continue on back of this sheet or on another sheet, if necessary.):

A competency-based guide developed for use by secondary/post-secondary Ornamental Horticulture instructors who wish to teach their students turfgrass maintenance as it applies to the Illinois turfgrass maintenance industry. Organization of tasks commences with general equipment, turfgrass, tree/shrub tasks, and proceeds to more specific and highly skilled turfgrass maintenance and sod production tasks.

17. Person Completing this Abstract: Susan E. Bates

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Turfgrass Maintenance

TURFGRASS MAINTENANCE MASTER RESOURCE LIST

MISCELLANEOUS

BOOKS:

Beard, James B. How to Have a Beautiful Lawn. Kansas City, Missouri: Intertec Publishing Corporation, 1975.

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Billick, John C. Turf Management. Columbus, Ohio: The Ohio Agricultural Education Curriculum Materials Service, The Ohio State University, 1973.

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Booker, L.V. Surface Irrigation. Food and Agricultural Organization, United Nations. UNIPUB, Box 433, Murray Hill Station, New York, N.Y., 1974.

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Monsanto Herbicide Handbook. St. Louis, Missouri: Agricultural Division, Monsanto Co., 1974.

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Seeding. St. Paul, Minnesota: Hobar Publications.

Shurtleff, Malcolm C. and Roscoe Randell. How to Control Lawn Diseases and Pests. Kansas City, Missouri: Intertec Publishing Corporation, 1974.

Soils. Brooklyn, New York: Brooklyn Botanic Garden.

Sprague, Howard. Turf Management Handbook. Danville, Illinois: The Interstate Printers & Publishers, Inc., 1976.

Steva, John L. and Harlan E. Ridenour. Weed Control - Cultural and Chemical. Columbus, Ohio: Ohio Agricultural Curriculum Materials Service, The Ohio State University, 1969.

United States Department of Agriculture. Yearbook. U.S. Government Printing Office, Washington, D.C. Grass. 1948.

Viergever, Richard. The Modern Golf Course Superintendent. Indianapolis, Indiana: Thompson Publishing Co., 1970.

BULLETINS AND PAMPHLETS:

Beard, James B. et al. Extension Bulletin E-673. Lawn Establishment. East Lansing, Michigan: Cooperative Extension Service, The Ohio State University, 1972.

Bird, G.W. and J.M. Vargas. Extension Bulletin E-940. Diagnosis and Control of Nematode Problems of Turfgrass. East Lansing, Michigan: Cooperative Extension Service, Michigan State University, 1976.

Circular 670. Sampling Lawn and Garden Soils. Madison, Wisconsin: Cooperative Extension Service, University of Wisconsin.

Cornell Extension Bulletin. Cornell Recommendations for Turfgrass.

Courson, R.L. Identifying and Controlling Lawn Insects. VAS 5016, Urbana, Illinois: Vocational Agricultural Service, University of Illinois.

Juska, F.V. and J.J. Murray. USDA Bulletin HG-61. Lawn Diseases: How to Control Them. Washington, D.C.: U.S. Department of Agriculture, 1973.

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Rogers Manufacturing Co. The Aerator Manual. Rogers Manufacturing Co., Olathe, Kansas.

Shickluna, John C. Extension Bulletin E-498. Sampling Soils. East Lansing, Michigan: Cooperative Extension Service, Michigan State University, 1975.

USDA Bulletin G-51. Better Lawns, Establishment, Maintenance, Renovation, Lawn Problems, Grasses. Washington, D.C.: U.S. Department of Agriculture, 1971.

USDA Bulletin G-89. Selecting Fertilizers for Lawns and Gardens. Washington, D.C.: U.S. Department of Agriculture, 1971.

USDA Bulletin HG-123. Lawn Weed Control with Herbicides. Washington, D.C.: U.S. Department of Agriculture, 1971.

Wallner, William E., et al. Extension Bulletin E-903. Lawn Pest Control. East Lansing, Michigan: Cooperative Extension Service, Michigan State University, 1975.

West Point Products, Corp. The Verticut Manual. West Point Products Corp., West Point, Pennsylvania.

OTHER SOURCES:

L.R. Nelson Mfg. Co., Inc. Irrigation Division, Peoria, Illinois

Ryan Equipment Co., St. Paul, Minnesota

Toro Mfg. Corp., Mower and Irrigation Division, Minneapolis, Minnesota

TURFGRASS RESOURCES - ILLINOIS

Available from:

Vocational Agriculture Service, College of Agriculture
University of Illinois
434 Mumford Hall
Urbana, Illinois 61801

SLIDEFILMS AND SLIDESETS:

No.	
442	Calibrating Field Sprayers
443	Calibrating a Granular Applicator
498	Using Power Lawn Mowers Safely
615	Objectives of Pruning Deciduous Trees
632	Water Features, Irrigation, Materials
641-1.1	Mechanical Digging of Trees and Shrubs
641-1.2	Hand Digging of Trees and Shrubs
643	Pruning Evergreens
644	Pruning Deciduous Shrubs
645	Pruning Flowering Trees
650	Lawn Weeds - Identification and Control
651	Steps to a Better Lawn
652	Identifying Illinois Turfgrasses
653	Seed Structure & Identification of Cool Season Turfgrasses
1108-1.1	Understanding & Safe Use of Pesticides
1108-1.2	Selecting & Handling Pesticides
1108-1.3	Calibrating & Applying Pesticides Safely
1108-2.2	Identifying Common Insect Pests

TURFGRASS RESOURCES - ILLINOIS con't.

SUBJECT-MATTER UNITS:

No.	
3005	Sharpening Hand Tools
3014	Small Engines - Principles of Operation, Trouble Shooting and Tune-Up
3019	Small Engines - Repair & Overhaul
4001	Collecting & Preparing Soil Samples for Testing
4002a	pH Test for Soil Acidity
4003b	Testing Soils for Phosphorus
4004b	Determining Available Potassium in Soils
4010a	Planning a Fertilizer Program
4011a	Hunger Signs in Crops
4028	Soil Structure
4029	Soil Color
4030	Soil Texture
4045a	Handling & Using Pesticides Safely
5002	Transplanting Shade Trees
5004	Pruning Shade Trees
5008	Establishing a Lawn
5015	Turfgrass Diseases & Their Control
5016	Identifying & Controlling Lawn Insects

TRANSPARENCIES & STUDY GUIDES:

How Herbicides Work Transparencies
Weed Control Transparencies
Safe Use of Pesticides

x

TURFGRASS RESOURCES - GEORGIA

Available from:

University of Georgia
Cooperative Extension Service
Athens, Georgia 30602

SLIDESETS:

No.	
28	Lawn Grass Maintenance

BULLETINS & LEAFLETS:

No.	
16	Brown Patch & Dollar Spot Disease of Lawns & Turf
96	Weed Control in Lawns
678	Weed Control in Lawns

TURFGRASS RESOURCES - KENTUCKY

Available from:

Competency Based Vocational Education Unit
2008 Capital Plaza Tower
Frankfort, Ky 40601
Attention: Donna G. Brown

MODULES:

No.	
GG-2	Developing Fertilization Schedules
GG-8	Preparing a Lawn Seedbed
GG-9	Applying Fertilizer
GG-10	Cleaning & Lubricating Fertilizer Applicators
GG-11	Sowing Lawn
GG-12	Revitalizing & Aerating Sod
GG-13	Ordering & Maintaining Repair Parts
GG-47	Servicing Irrigation Systems
GG-70	Applying Chemicals with a Tractor-Mounted Sprayer
GG-71	Applying Weed Killing Compounds
NP-52	Understanding Pesticide Labels

TURFGRASS RESOURCES - OHIO

Available from:

Ohio Agricultural Education Curriculum Materials Service
The Ohio State University
Room 254
2120 Fyffe Road
Columbus, Ohio 43210

SLIDES AND SCRIPT:

No.	
AGDEX 273	Lawn Care and Management
AGDEX 273-20	Lawn Renovation and Reestablishment
AGDEX 200-88	Pruning Landscape Ornamentals
AGDEX 273-630	Turf Diseases of the Midwest

STUDENT MANUALS:

No.	
AGDEX 610	Some Common Types of Insects
AGDEX 745	Mowers
AGDEX 273-630	Turf Management

TURFGRASS RESOURCES - WEST VIRGINIA

Available from:

Cooperative Extension Service
Pest Information Service
West Virginia University
Morgantown, West Virginia

Thatch Removal in Lawns
Flag and Stripe Smut on Turf
Helminthosporium Leaf Spots
Combination Fertilizer & Pesticide Use and Misuse in Lawns

Available from:

College of Agriculture & Forestry Division of Resource Management
West Virginia University
Morgantown, West Virginia

Lawn Maintenance
Lawn Establishment

Holyohe, Vaughn. 'Turfgrass Pest Control', Prepared for the purpose of Pesticide Certification; West Virginia Department of Agriculture, Charleston, West Virginia.

Equipment Operation and Maintenance

- Clean and Sharpen Hand Tools, *page 1*
- Clean and Sharpen Mower Blades, *page 3*
- Check Oil in Power Driven Turfgrass Equipment, *page 5*
- Operate a Sod Cutter, *page 7*
- Order Repair Parts, *page 9*

Equipment Operation and Maintenance

Turfgrass Unit: EQUIPMENT OPERATION AND MAINTENANCE

Competency Task: CLEAN AND SHARPEN HAND TOOLS

Performance Objective	Learning Activities	Evaluation	Resources
Given a variety of hand tools, (i.e. saw, hammer, shovel, hoe, pruning shears) and supplies necessary for cleaning and sharpening tools, remove all foreign matter and sharpen the tools. For satisfactory performance, gaps must be removed from cutting edges of tools and the original bevel of the cutting edge must be maintained. All tools must be free from dirt, dry, and covered with a light film of WD 40 or other suitable lube oil that will prevent rust.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS 3005 'Sharpening Hand Tools' (subject-matter unit) KENTUCKY GG-27 'Servicing Hand Tools' (module)
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Demonstration - instructor	4) Attendance	
	5) Complete Performance Objective	5) Performance Guide/ Instructor Approval	Performance Guide

Performance Guide

CLEAN AND SHARPEN HAND TOOLS

1. Decide on work area to do the cleaning.
2. Wash tools with soap and water or clean with a wire brush or steel wool.
3. Remove excess cleaner and dry tools if necessary.
4. Observe all safety precautions when using sharpening equipment.
5. Select the appropriate equipment and use it safely to sharpen each designated tool.
6. Use different pieces of sharpening equipment in their intended sequence when more than one tool is involved. For example, do not use an emery wheel or file after first using a whetstone.
7. Sharpen each designated tool to a satisfactory cutting edge.
8. Clean tools and equipment used for sharpening and return them to their designated place when job is finished.
9. Apply necessary coating of oil or lubricant for rust protection.
10. Return tools to their regular place in the storage area.

Turfgrass Unit: EQUIPMENT OPERATION AND MAINTENANCE

Competency Task: CLEAN AND SHARPEN MOWER BLADES

Performance Objective	Learning Activities	Evaluation	Resources
Given mower blades coated with clippings and in need of sharpening, and supplies necessary for cleaning and sharpening, clean and sharpen the mower blades and bed knife. For satisfactory performance, no clippings, trash, or other debris will remain, the bed knife will be smooth, even, and level over its entire surface, and the reel blades ground to match the bed knife and to the angle (bevel) recommended by the manufacturer.	1) Read appropriate selections from Master Resource List 2) Read subject-matter units 3) Group discussion - importance of clean, sharp mower blades, equipment needed and procedures used in cleaning/sharpening mower blades 4) Demonstration - cleaning/sharpening mower blades by lawn mower repair person/instructor 5) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Attendance 5) Performance Guide/ Instructor Approval	Selections from Master Resource List OHIO 'Mowers' (student manual) Manufacturer's Recommendations Performance Guide

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1. Identify mowers on which blades are to be cleaned and sharpened.

2. Clean debris from mower blades by washing them away with water hose, by blowing them away with compressed air or by employing both techniques.

3. Remove blades and bed knife.

4. Set blade and bed knife in grinding machine.

5. Grind to prescribed angle and to the desired smoothness and sharpness using grinding machine.

6. Replace blades and bed knife.

7. Return mowers to proper storage area.

Turfgrass Unit: EQUIPMENT OPERATION AND MAINTENANCE

Competency Task: CHECK OIL IN POWER DRIVEN TURFGRASS EQUIPMENT

Performance Objective	Learning Activities	Evaluation	Resources
Given selected pieces of engine driven turfgrass equipment and operation manual, make a pre-operation oil check. When oil level is found to be low, oil of the grade and type specified in the operations manual must be added to bring the oil level up to or only slightly below the full mark as indicated on dip sticks. For satisfactory performance, your findings must agree with those of the instructor.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	ILLINOIS
	3) Read subject-matter units	3) Notes	3014 'Small Engines - Principles of Operation, Trouble Shooting, and Tune-Up' (subject-matter unit)
	4) Read Manufacturer's Operating Instructions	4) Notes	
	5) Group discussion - importance of checking oil, damage to equipment if oil level not correct, and procedures used to check and add oil	5) Participation	3019 'Small Engines - Repair and Overhaul' (subject-matter unit)
			KENTUCKY
			GG-20 'Adding Oil in Small Engines' (module)
	6) Demonstration - checking and adding oil by mechanic/instructor	6) Attendance	Manufacturer's Operating Instructions
	7) Complete Performance Objective	7) Performance Guide/ Instructor Approval	Performance Guide

1. Read and interpret operations manuals for locating dip stick.

2. Consult manuals to determine grades and types of oil to be used.

3. Observe dip sticks for marks indicating oil level reading.

4. Watch for dirty oil and/or other contaminants making oil unfit for use.

5. Report findings to instructor.

Turfgrass Unit: EQUIPMENT OPERATION AND MAINTENANCE

Competency Task: OPERATE A SOD CUTTER

Performance Objective	Learning Activities	Evaluation	Resources
Given an area of sod to be cut and a sod cutter, cut the sod in such a way that it will meet the pruposes for which it is to be used. For satisfactory performance, the size of cut sod must meet the instructor's specifications.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Read subject-matter units	2) Notes	Manufacturer's Operating Instructions
	3) Review Manufacturer's Operating Instructions	3) Notes/Ability to operate equipment properly and safely	Local Sod Farm
	4) Demonstration - use of sod cutter by sod farm worker/instructor	4) Attendance	Performance Guide
	5) Complete Performance Objective	5) Performance Guide/ Instructor Approval	

Performance Guide

OPERATE A SOD CUTTER

1. Perform service check on sod cutter.
2. Level cutting bar and make other mechanical adjustments if necessary.
3. Cut sod to specifications.
4. Clean sod cutter following use and return to its proper place.

Turfgrass Unit: EQUIPMENT OPERATION AND MAINTENANCE

Competency Task: ORDER REPAIR PARTS

Performance Objective	Learning Activities	Evaluation	Resources
Given a damaged part from a piece of equipment commonly used on the golf course, an operator's manual and a parts catalogue with order blank, get the correct parts numbers and prepare the order blank in such a way that the particular repair part needed can be procured without uncertainty or unnecessary delay. For satisfactory performance, the order blank must have instructor approval.	1) Read appropriate selections from Master Resource List 2) Read subject-matter units 3) Review sample catalogues/order blanks 4) Group discussion - writing and submitting orders 5) Complete Performance Objective	1) Notes 2) Notes 3) Notes 4) Participation 5) Performance Guide/ Instructor Approval	Selections from Master Resource List KENTUCKY GG-13 'Ordering and Maintaining Repair Parts ' (module) Parts catalogues/order blanks Performance Guide

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1. Identify serial number and model number of parts needed either by using the parts catalogue or reading the numbers from the part itself.

2. Copy serial and model numbers down and make sure they are accurate.

3. Prepare order blank neatly with accompanying letter, being certain to specify method of shipment and financial arrangements.

General Turfgrass Maintenance

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- Report Diseased Turf, *page 13*
- Report Weed Infestations, *page 16*
- Mix Pesticides, *page 19*
- Apply Pesticides, *page 21*
- Aerify Turf, *page 24*
- Verticut Turf, *page 26*
- Apply Topdressing, *page 28*
- Overseed Turf, *page 30*
- Repair Divots, *page 33*
- Reestablish Turf by Solid Sodding, *page 35*

General Turfgrass Maintenance

Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: REPORT INSECT DAMAGE

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated turfgrass area with known insect damage, inspect and list the damage and insect. For satisfactory performance, findings must agree with those of the instructor.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS 1108-2.2 'Identifying Common Insect Pests' (slidefilm/slideset) 5016 'Identifying & Controlling Lawn Insects' (subject-matter unit) Circ. 1082 'Illinois Lawn Care & Establishment' OHIO 'Some Common Types of Insects' (student manual) Cooperative Extension Service Office Chemical company posters/ catalogues Performance Guide
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Group/Independent Research - common local turfgrass insect problems	4) Notes/Report findings	
	5) Group/Independent Collection - common local turfgrass insects	5) Insect Collection	
	6) Complete Performance Objective	7) Performance Guide/ Instructor Approval	

Performance Guide

REPORT INSECT DAMAGE

1. Inspect the designated turf-grass area.
2. Identify the insect or insects responsible for the damage (i.e. crickets, army worms, sod web worms, cinch bugs)
3. Describe insect damage.
4. Appraise the seriousness of insect damage.
5. Report findings and the degree of damage.

Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: REPORT DISEASED TURF

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated turfgrass area, portions of which are knwon to be diseased, inspect the area, identify portions where disease is in evidence, report the organisms responsible and the seriousness of the damage. For satisfactory performance, findings must agree with those of the instructor.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS 5015 'Turfgrass Diseases & Their Control' (subject-matter unit) Circ. 1082 'Illinois Lawn Care & Establishment' GEORGIA Lflt. 16 'Brown Patch & Dollar Spot Disease of Lawn & Turf' OHIO 'Turf Diseases of the Midwest' (slides/script) WEST VIRGINIA 'Flag & Stripe Smut on Turf' 'Helminthosporium Leaf Spots' Cooperative Extension Service Office
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Group/Independent Research - common local turfgrass diseases	4) Notes/Report findings	
	5) Group Practice - identification of turfgrass diseases	5) Participation	
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	

Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: REPORT DISEASED TURF - 2

Performance Objective	Learning Activities	Evaluation	Resources
			Chemical company posters/ catalogues Performance Guide

Performance Guide

REPORT DISEASED TURF

1. Inspect the designated area.
2. Identify those portions of the area where disease is evident.
3. Describe diseased area.
4. Determine the nature and seriousness of disease.
5. Report findings.

Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: REPORT WEED INFESTATIONS

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated turfgrass area with known weed infestation, inspect the infested area, identify the competing weed(s) and the seriousness of their presence. For satisfactory performance, findings must agree with those of the instructor.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS 791a 'Weed Identification' (slidefilm/slideset) 791a (supp) 'Practice Set Weed Identification' (slidefilm/slideset) 800 'Identification of Weed Seedlings-Broadleaves, Pt. I' (slidefilm/slideset) 801 'Identification of Weed Seedlings-Broadleaves, Pt.II' (slidefilm/slideset) 803 'Identification of Weed Seedlings-Grasses' (slidefilm/slideset) 811 'The Wicked World of Weeds' (slidefilm/slideset) 650 'Lawn Weeds-Identification and Control' (slidefilm/slideset)
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Group/Independent Research - common local weeds	4) Notes/Report findings	
	5) Group Practice - identification of weeds	5) Participation	
	6) Complete Performance Objective	6) Performance Guide/ TEST VAS 4042a 'Controlling Weeds'/Instructor Approval	

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Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: REPORT WEED INFESTATIONS - 2

Performance Objective	Learning Activities	Evaluation	Resources
			TEST VAS 4042a 'Controlling Weeds'/Teacher Key Cooperative Extension Service Office Chemical company posters/ catalogues Performance Guide

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Performance Guide

REPORT WEED INFESTATIONS

1. Inspect the designated area.

2. Identify the weed or weeds present and the level of infestation.

3. Appraise the seriousness of the infestation, reporting findings.

Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: MIX PESTICIDES

Performance Objective	Learning Activities	Evaluation	Resources
Given a specified turfgrass area to be treated and the water, pesticide tanks, and safety equipment necessary for mixing, mix the required amount of spray solution for use on the specified turfgrass area. For satisfactory performance, mixing procedures must conform to the manufacturer's specifications as given on the container, and meet any other requirements specified by the instructor.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	ILLINOIS 1108-1 'Understanding & Safe Use of Pesticides' (slidefilm/slideset)
	3) Read subject-matter units	3) Notes	
	4) Group discussion - various forms of pesticides and compatibility of pesticides	4) Participation	1108-1.2 'Selecting & Handling Pesticides' (slidefilm/slideset)
	5) Group review - E.P.A. standards and regulations	5) Participation/Follow standards and regulations	4045a 'Handling & Using Pesticides Safely' (subject-matter unit)
	6) Complete Performance Objective	6) Performance Guide/ E.P.A. Regulations/ Instructor Approval	KENTUCKY NP-52 'Understanding Pesticide Labels' (module) E.P.A. Standards & Regulations Cooperative Extension Service Office Performance Guide

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Performance Guide

MIX PESTICIDES

1. Calculate the square footage to be covered by the pesticide.
2. Measure the pesticide following the manufacturer's specifications.
3. Fill tank to required level with water and engage the agitator.
4. Add chemicals slowly in the prescribed amounts wearing rubber gloves and observing all other safety precautions.
5. Check to make certain that all the chemical is dissolved.
6. Dispose used cartons as specified on chemical label and according to EPA regulations.
7. Return left over materials to storage.

Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: APPLY PESTICIDES

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated area of turfgrass, a pesticide and the necessary equipment for application, apply the pesticide according to the label directions, to the designated area. For satisfactory performance, the pesticide must be evenly distributed at the desired rate over the entire area following safety recommendations and meeting instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS
	2) View filmstrips/slides	2) Notes	442 'Calibrating Field Sprayers' (slidefilm/slideset)
	3) Read subject-matter units	3) Notes	443 'Calibrating a Granular Applicator' (slidefilm/slideset)
	4) Group discussion - compatibility of pesticides	4) Participation	1108-1.1 'Understanding & Safe Use of Pesticides' (slidefilm/slideset)
	5) Group/Independent Research - pesticide labels, safety recommendations, and calibrations	5) Notes/Report findings	1108-1.2 'Selecting & Handling Pesticides' (slidefilm/slideset)
	6) Group/Independent Practice - calculating pesticide calibrations	6) Instructor approval	1108-1.3 'Calibrating & Applying Pesticides Safely' (slidefilm/slideset)
	7) Complete Performance Objectives	7) Performance Guide/ Instructor Approval	Circ. 1076 '1978 Turfgrass Pest Control' 'How Herbicides Work' (transparencies/student guide) 'Safe Use of Pesticides' (transparencies/student guide)

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Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: APPLY PESTICIDES - 2

Performance Objective	Learning Activities	Evaluation	Resources

Resources

4045a 'Handling & Using Pesticides Safely' (subject-matter unit)

KENTUCKY

GG-70 'Applying Chemicals with a Tractor-Mounted Sprayer' (module)

GG-71 'Applying Weed Killing Compounds' (module)

WEST VIRGINIA

'Combination Fertilizer & Pesticides-Use and Misuse in Lawns'

E.P.A. Standards and Regulations

Cooperative Extension Service Office

Pesticide Containers

Performance Guide

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Performance Guide

APPLY PESTICIDES

1. Check out and service equipment assigned for you to demonstrate.

2. Calibrate and/or adjust applicator with water for the prescribed rate of application.

3. Apply the pesticide specified for controlling disease.

4. Clean application equipment immediately following use, returning it to proper place in the storage area.

Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: AERIFY TURF

Performance Objective	Learning Activities	Evaluation	Resources
Given a properly mowed golf green or other turfgrass area needing aerification, a hydraulic coring machine, grooving machine, slicer or other suitable implement, aerate the soil as effectively as possible considering the particular machine assigned to you. For satisfactory performance, the aerification process must meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Read Manufacturer's Operating Instructions	2) Notes/Ability to operate equipment properly and safely	Manufacturer's Operating Instructions
	3) View filmstrips/slides	3) Notes	ILLINOIS 651 'Steps to a Better Lawn' (slidefilm/slideset)
	4) Read subject-matter units	4) Notes	
	5) Group discussion - aerifying equipment, reasons for aerifying turf, and procedures used to aerify turf	5) Participation	KENTUCKY GG-12 'Revitalizing & Aerating Sod' (module)
	6) Demonstration - golf course worker/instructor	6) Attendance	Golf Course Worker Performance Guide
	7) Complete Performance Objective	7) Performance Guide/ Instructor Approval	

C4

C5

Performance Guide AERIFY TURF

1. Service aerifying machine.
2. Remove cup and flagstick (if aerifying a green).
3. Following an orderly workable pattern, aerate the green or other assigned turfgrass area.
4. Check oil, gasoline, lubrication levels in the machine periodically as aerification continues.
5. Remove cores from green or other turf area by verticutting or dragging core remants from surface.
6. Vaccuum or rake debris from turf following aerification.
7. Relocate cup after aerification.
8. Clean aerifier and return all equipment to storage.

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Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: VERTICUT TURF

Performance Objective	Learning Activities	Evaluation	Resources
Given a suitable machine and a designated turf area needing verticutting, verticut the entire area. Verticutting should be done to a depth of 2 inches and in two different directions (the second at right angles to the first), with thatch accumulations completely broken up and removed. A drag mat will be used on the area after verticutting to remove any remaining debris that would interfere with play. For satisfactory performance, the verticutting must meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Read Manufacturer's Operating Instructions	2) Notes/Ability to operate equipment properly and safely	Manufacturer's Operating Instructions
	3) Read subject-matter units	3) Notes	WEST VIRGINIA 'Thatch Removal in Lawns'
	4) Group discussion - verticutting equipment, reasons to verticut turf, and procedures used to verticut turf	4) Participation	Golf Course Worker Performance Guide
	5) Demonstration - golf course worker/instructor	5) Attendance	
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	

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1. Service verti-cutting unit.

2. Verticut from one direction as thatch depth indicates and then in another at right angles to the first cutting.

3. Drag mat over entire green area after verti-cutting.

4. Clean verticutting machine and return to storage.

Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: APPLY TOPDRESSING

Performance Objective	Learning Activities	Evaluation	Resources
Given an area of turf to be topdressed and a sterilized soil for use in topdressing, apply a prescribed amount of topdressing to turf area. For satisfactory performance, topdressing must be applied at the prescribed rate evenly and smoothly over the designated area, and meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Group discussion - reasons for topdressing and procedures used in topdressing turf areas	2) Participation	Golf Course Worker Performance Guide
	3) Demonstration - golf course worker/instructor	3) Attendance	
	4) Complete Performance Objective	4) Performance Guide/ Instructor Approval	

Performance Guide

APPLY TOPDRESSING

1. Service top-dressing machine.

2. Fill the machine with soil to be used as topdressing.

3. Calibrate top-dressing machine.

4. Apply topdressing in prescribed pattern, moving either in a circular pattern or back and forth.

5. Drag the top-dressing into turf after it is suff-iciently dry.

6. Clean tools and equipment used and store.

Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: OVERSEED TURF

Performance Objective	Learning Activities	Evaluation	Resources
Given the required seed, a cyclone or gravity seeder, and a specific area on a golf course in need of overseeding, overseed the area after preparing a suitable seedbed. For satisfactory performance, all items on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Read subject-matter units	2) Notes	KENTUCKY GG-11 'Sowing Lawn' (module)
	3) Group discussion - reasons for overseeding and procedures used for overseeding turf areas	3) Participation	Golf Course Worker Performance Guide Instructor Checklist
	4) Demonstration - golf course worker/instructor	4) Attendance	
	5) Complete Performance Objective	5) Performance Guide/ Instructor Checklist	

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1. Verticut the area in several directions.

2. Remove debris remaining from verti-cutting by means of a drag net.

3. Apply topdressing and fertilizer uniformly and evenly over the entire area to be overseeded.

4. Distribute seed a proper rate uniformly over the area by means of either a cyclone or drop seeder. ½ - ½ spreading at light L's.

5. Irrigate after completing the job and as often as necessary thereafter to insure a good stand of the overseeded grass.

6. Return tools, equipment and unused materials to appropriate area for storage when the job has been completed.

Instructor Checklist

OVERSEED TURF

ACCEPTABLE

1. Seedbed had been well prepared prior to the time of over-seeding and was in good condition.

2. Seeder was properly calibrated and operated to insure the specified rate of seeding.

3. Seed was distributed uniformly and evenly over the entire area designated for seeding.

4. Prescribed fertilizers were applied as prescribed.

5. Area was properly irrigated after job was completed.

6. Left over seed and fertilizer, if any, were properly stored when job was completed.

7. All tools and equipment were properly cleaned and stored following use.

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Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: REPAIR DIVOTS

Performance Objective	Learning Activities	Evaluation	Resources
Given designated tees where divots occur, the necessary tools, equipment and materials, repair the divots. For satisfactory performance, steril soil must be packed into existing divots, the area must be left in a clean, smooth, playable condition and meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Group discussion - reasons for replacing divots and procedures used to replace divots	2) Participation	Golf Course Worker
	3) Demonstration - golf course worker/instructor	3) Attendance	Performance Guide
	4) Complete Performance Objective	4) Performance Guide/ Instructor Approval	

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1. Load the necessary tools and top-dressing on truckster or pickup and drive to area containing divots.

2. Add soil to divots

3. Level and press soil to soil line.

4. Clean all tools and equipment after use and return them to their proper place.

Turfgrass Unit: GENERAL TURFGRASS MAINTENANCE

Competency Task: REESTABLISH TURF BY SOLID SODDING

Performance Objective	Learning Activities	Evaluation	Resources
Given an area of damaged turf to be reestablished, necessary tools and equipment and sufficient sod to cover the area, prepare the land and proceed to sod the assigned area. For satisfactory performance, all items included in the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrip/slides	2) Notes	ILLINOIS 5008 'Establishing a Lawn' (subject-matter unit)
	3) Read subject-matter units	3) Notes	OHIO 'Lawn Renovation & Re-establishment' (slides and script)
	4) Group discussion - calculating amount of sod needed, soil preparation, pattern and procedures used to lay sod	4) Participation	WEST VIRGINIA 'Lawn Establishment'
	5) Demonstration - golf course worker/instructor	5) Attendance	Golf Course Worker
	6) Complete Performance Objective	6) Performance Guide/ Instructor Checklist	Performance Guide Instructor Checklist

1. Inspect the area to determine tools and equipment needed.
2. Determine size of the area to be sodded and cut or otherwise procure the required amount of sod to do the job.
3. Grade, level, fertilize and otherwise prepare the soil for laying the sod.
4. Decide method of sodding and lay the sod according to the requirements for the particular kind of sod to be used.
5. If rectangular pieces of sod are used, fit the pieces closely together.
6. Roll the sodded area immediately after sod as been laid.
7. Thoroughly irrigate the area after sodding and thereafter, depending on weather and turf conditions.
8. Roll area repeatedly as required to insure smooth, even turf.

Instructor Checklist

REESTABLISH TURF BY SOLID SODDING

ACCEPTABLE

1. Tools and equipment selected for leveling the land and preparing the soil were suitable.
2. Fertilizers were carefully selected and thoroughly mixed into the soil prior to laying the sod.
3. Sod was carefully laid joint to joint over the entire area to be sodded.
4. The laid sod was rolled sufficiently to insure tightness of turf prior to the first irrigation.
5. The first irrigation was done as soon as the sod was laid and rolled.
6. Irrigations were repeated as frequently as needed, depending on weather and turf conditions.

ACCEPTABLE

7. Small amounts of fertilizers were applied as necessary preceeding irrigations and sod was rolled following irrigations to insure establishment of a smooth, even dense high quality turf.
8. All tools and equipment were well cleaned and dried following use and then returned to their allocated space in the storage area.

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Maintenance of Trees and Shrubs

- Plant Trees and Shrubs, *page 38*
- Prune Trees and Shrubs, *page 41*
- Report Insect Damage on Trees and Shrubs, *page 45*
- Report Diseased Trees and Shrubs, *page 47*
- Remove Trees and Shrubs, *page 49*

Maintenance of Trees and Shrubs

Turfgrass Unit: MAINTENANCE OF TREES AND SHRUBS

Competency Task: PLANT TREES AND SHRUBS

Performance Objective	Learning Activities	Evaluation	Resources
Given a specified number of trees and/or shrubs to be planted in a designated area, the necessary tools, equipment and materials for planting them, prepare the planting area, plant the trees and/or shrubs, and stake them as needed. For satisfactory performance, all items on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	ILLINOIS 641-1.1 'Mechanical Digging of Trees and Shrubs' (slidefilm/slideset)
	3) Read subject-matter units	3) Notes	641-1.2 'Hand Digging of Trees and Shrubs' (slidefilm/slideset)
	4) Consult local cooperative extension service office for recommended procedures	4) Notes/Report findings	5002 'Transplanting Shade Trees' (subject-matter unit)
	5) Demonstration - local industry person/instructor	5) Attendance	TEST VAS 5002 'Transplanting Shade Trees'/ Teacher Key
	6) Complete Performance Objective	6) Performance Guide/ Instructor Checklist/ TEST VAS 5002 'Transplanting Shade Trees'	KENTUCKY GG-58 'Transplanting Trees' (module)
			Local Industry
			Cooperative Extension Service Office
			Performance Guide
			Instructor Checklist

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1. Select appropriate tools, equipment and materials for planting.

2. Proceed to designated area for planting.

3. Plant trees and/or shrubs in designated locations using proven and recommended practices.

4. Clean and return all tools, equipment and any left over materials to their proper locations in storage area after job is completed.

Instructor Checklist

PLANT TREES AND SHRUBS

ACCEPTABLE

1. Tools, equipment and materials were properly selected and used.
2. Holes were dug in designated areas to accommodate the requirements of the particular shrub or tree to be planted in a particular hole.
3. Soil amendments and plant foods were placed in the hole and carefully mixed before the planting was done.
4. Trees and shrubs were set in holes before final placement in order to check depth of planting and necessary adjustments were made in depth and size of hole.
5. Trees and shrubs were planted at proper depth.
6. Holes were backfilled and water was applied in the process to prevent air pocketing.

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ACCEPTABLE

7. Stakes and/or guy wires were attached to trees when this was necessary to secure desired stability.
8. Trunks were protected to avoid guy wire damage.
9. Additional water was applied in a basined area around the plant to provide a reserve of moisture and to insure good moisture penetration.
10. Post planting attention was continued to insure establishment.

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Turfgrass Unit: MAINTENANCE OF TREES AND SHRUBS

Competency Task: PRUNE TREES AND SHRUBS

Performance Objective	Learning Activities	Evaluation	Resources
Given trees and shrubs which need pruning, the necessary pruning tools and other equipment, prune each tree and shrub according to its particular needs. For satisfactory performance, all items on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS 615 'Objectives of Pruning Deciduous Trees' (slidefilm/slideset) 643 'Pruning Evergreens' (slidefilm/slideset 644 'Pruning Deciduous Shrubs' (slidefilm/slideset) 645 'Pruning Flowering Trees' (slidefilm/slideset) 5004 'Pruning Shade Trees' (subject-matter unit) KENTUCKY GG-61 'Pruning & Trimming Trees' (module) GG-64 'Pruning Shrubs to Provide Stimulation & Rejuvenation' (module) GG-65 'Pruning Shrubs for Shaping' (module)
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Demonstration - pruning, by local industry person/instructor	4) Attendance	
	5) Group discussion - supervisor of commercial tree trimming company/local power company	5) Participation	
	6) Complete Performance Objective	6) Performance Guide/ Instructor Checklist	

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Turfgrass Unit: MAINTENANCE OF TREES AND SHRUBS

Competency Task: PRUNE TREES AND SHRUBS - 2

Performance Objective	Learning Activities	Evaluation	Resources
			GG-66 'Pruning Hedges for Shaping' (module) OHIO 'Pruning Landscape Ornamentals' (slides and script) Performance Guide Instructor Checklist

Performance Guide

PRUNE TREES AND SHRUBS

1. Carefully examine each tree and shrub to determine nature of pruning needed.

2. Gather the necessary tools and equipment for performing the task.

3. Prune trees and shrubs in the designated area.

4. Apply pruning paint to pruned branches.

5. Pick-up limbs and branches and haul them away when job is finished.

6. Clean saws, pruning tools and other equipment used and return the same to their appropriate place in the storage area when the job is finished.

Instructor Checklist

PRUNE TREES AND SHRUBS

ACCEPTABLE		ACCEPTABLE	
	1. Tools selected and used for pruning each tree and shrub were suitable.		6. Sufficient care was taken to avoid bruising limbs and branches and pruning paint was applied to surfaces where large limbs had been severed.
	2. All dead and damaged branches were removed.		7. Tools were cleaned and returned to their proper place when the work was completed.
	3. A sufficient number of live limbs and branches were removed to permit an adequate amount of sunlight to penetrate the foliage and give the tree or shrub a desirable shape, appearance and aesthetic balance.		
	4. Limbs and branches cut out were selected with care.		
	5. Tools were properly used and cared for in such a way as not to dull their cutting edge unnecessarily or damage the trees and shrubs being pruned.		

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Turfgrass Unit: MAINTENANCE OF TREES AND SHRUBS

Competency Task: REPORT INSECT DAMAGE ON TREES AND SHRUBS

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated area with known tree/shrub insect damage, inspect and list the damage and insect. For satisfactory performance, findings must agree with those of the instructor.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS 1108-2.2 'Identifying Common Insect Pests' (slidefilm/slideset) 5021 'Identifying Tree and Shrub Insects' (subject-matter unit) OHIO 'Insect and Insect-like Pests of Landscape Ornamentals' (slideset and script) 'Some Common Types of Insects' (student manual) Cooperative Extension Service Office Chemical company posters/ catalogues Performance Guide
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Group/Independent Research - common local tree/shrub insect problems	4) Notes/Report findings	
	5) Group/Independent Collection - common local tree/shrub insects	5) Insect Collection	
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	

Performance Guide

REPORT INSECT DAMAGE ON TREES AND SHRUBS

1. Check overall appearance of plants. Wilting or discoloring of leaves or branches may indicate presence of harmful insects below soil surface.
2. Check upper and lower surfaces of leaves.
3. Check individual branches.
4. Check stem.
5. Check soil around and underneath plants.
6. Identify the insect or insects responsible for the damage.
7. Describe insect damage.
8. Appraise the seriousness of insect damage.
9. Report findings and the degree of damage.

Turfgrass Unit: MAINTENANCE OF TREES AND SHRUBS

Competency Task: REPORT DISEASED TREES AND SHRUBS

Performance Objective	Learning Activities	Evaluation	Resources
Given trees and shrubs known to be diseased, inspect the trees/shrubs, identify portions where disease is in evidence, report the organisms responsible and the seriousness of the damage. For satisfactory performance, findings must agree with those of the instructor.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS 616 'Selecting Trees for Landscape Use' (slidefilm/slideset) 5001 'Selecting Trees for Home Planting' (subject-matter unit) Pesticide Manufacturer's Brochures/Posters
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Group/Independent Research - common local tree/shrub diseases	4) Notes/Report findings	
	5) Group Practice - identification of tree/shrub diseases	5) Participation	
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	

Performance Guide

REPORT DISEASED TREES AND SHRUBS

1. Inspect designated trees and shrubs.
2. Identify those portions of the plant where disease is evident.
3. Describe diseased area on plant.
4. Determine the nature and seriousness of disease.
5. Report findings.

Turfgrass Unit: MAINTENANCE OF TREES AND SHRUBS

Competency Task: REMOVE TREES AND SHRUBS

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated area from which trees and/or shrubs are to be removed, select the necessary tools and equipment and remove them. For satisfactory performance, all major roots must be removed, holes must be filled with topsoil so that no serious depressions or low spots will develop as a result of soil settling, and removal procedures will meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	KENTUCKY GG-63 'Remove Dead and Unwanted Trees' (module)
	3) Read subject-matter units	3) Notes	
	4) Demonstration - tree removal by local tree service company	4) Attendance	Local Industry Cooperative Extension Service Office
	5) Complete Performance Objective	5) Performance Guide/ Instructor Approval	Performance Guide

Performance Guide

REMOVE TREES AND SHRUBS

1. Inspect the area from which trees and shrubs are to be removed.
2. Select tools and equipment necessary for removal of trees and shrubs.
3. Systematically dig up trees and shrubs that have been identified for removal.
4. Back fill holes resulting from the removal of trees and shrubs.
5. Dispose of trees and shrubs that have been removed.
6. Re-sod exposed area.
7. Clean tools and equipment, returning them to their proper place in the storage area.

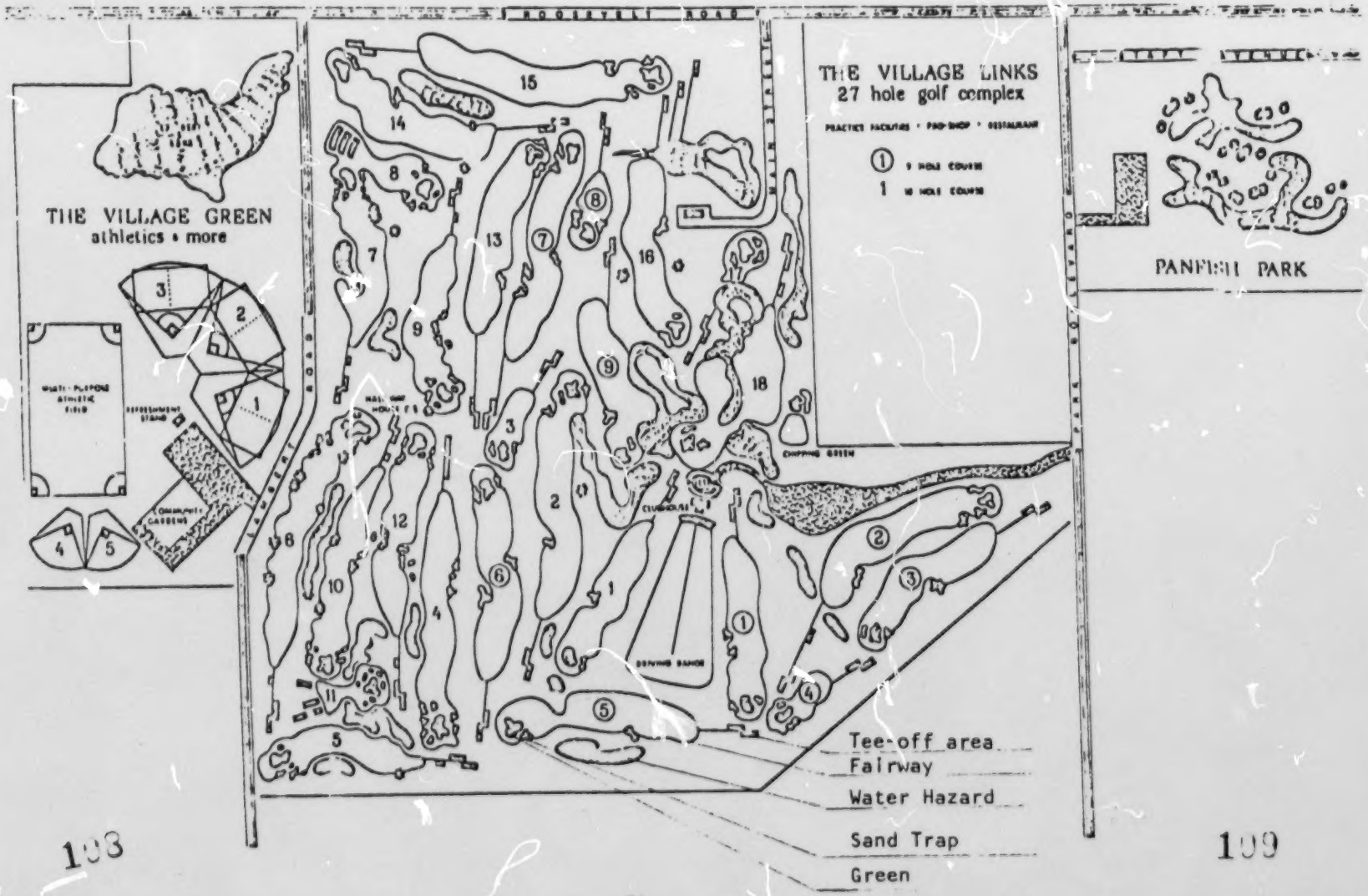
Maintenance of Greens and Trees

- Golf Course Diagram, *page 51*
- Mow Greens, *page 52*
- Mow Collars, *page 55*
- Mow Aprons, *page 57*
- Relocate Cups, *page 59*
- Relocate Tee Markers, *page 61*
- Replace Tee Markers, *page 63*
- Irrigate Greens with a Manual System, *page 65*
- Apply Fertilizer to Greens, *page 68*

Maintenance of Greens and Trees

THE VILLAGE OF GLEN ELLYN RECREATION DEPARTMENT

"leader in quality community recreational facilities"



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Turfgrass Unit: MAINTENANCE OF GREENS AND TEES

Competency Task: MOW GREENS

Performance Objective	Learning Activities	Evaluation	Resources
Given an unmowed green and a riding or walk behind, self-propelled greens mower, mow the green. For satisfactory performance, the mowing must meet all of the requirements on the instructor's checklist.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Read Manufacturer's Operating Instructions	2) Notes/ability to operate equipment properly & safely	Manufacturer's Operating Instructions
	3) View filmstrips/slides	3) Notes	ILLINOIS 498 'Using Power Lawn Mowers Safely' (slidefilm/slideset)
	4) Read subject-matter units	4) Notes	KENTUCKY
	5) Demonstration - golf course worker/instructor	5) Attendance	GG-54 'Mowing Grass' (module)
	6) Complete Performance Objective	6) Performance Guide/ Instructor Checklist	OHIO 'Mowers' (student manual) Golf Course Worker Greens Equipment Catalogues Performance Checklist Instructor Checklist

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Performance Guide

MOW GREENS

1. Perform service check on mower.

2. Transport mower to greens area and, approaching the green from the rear, drive mower on to green.

3. Inspect green:

   a. repair ball marks
   b. remove flag stick
   c. step on plugs from old cups
   d. check greens for stones, lost spikes, broken tees, etc.
   e. step down on automatic irrigation heads

4. Mow green in required direction and check levels of clippings in grass catchers, emptying when required.

5. Replace flagstick.

6. Wash mower and mower blades

7. Return mower to proper place in storage area.

Instructor Checklist

MOW GREENS

ACCEPTABLE

1. Service check was performed on mower.
2. Sit screws on cutting assembly were checked to insure correct cutting level as prescribed by instructor.
3. Greens were inspected, ball marks and flagstick were removed, sprinkler heads were checked, and stones, etc. were removed.
4. Mowing was done in straight lines.
5. Outer edge of green was ringed.
6. Flagstick was removed.
7. Mower and mower blades were washed after all mowing was completed.
8. Mower was returned to proper storage place.

Turfgrass Unit: MAINTENANCE OF GREENS AND TEES

Competency Task: MOW COLLARS

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated green requiring collar to be mowed, and a previously adjusted mower designated for mowing collars, mow collar. For satisfactory performance, the collar will be mowed uniformly at a height slightly higher than the putting surface so that it is easily distinguishable from the putting surface.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	ILLINOIS 498 'Using Power Lawn Mowers Safely' (slidefilm/slideset)
	3) Read subject-matter units	3) Notes	
	4) Group discussion - collar mowing procedures	4) Participation	KENTUCKY GG-54 'Mowing Grass' (module)
	5) Demonstration - golf course worker/instructor	5) Attendance	OHIO 'Mowers' (student manual)
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	Golf Course Worker Performance Guide

Performance Guide

MOW COLLARS

1. Perform service check on mower.

2. Transport mower to green where collar is to be mowed.

3. Inspect for debris, pop-up sprinkler heads.

4. Approaching the green from the rear, mow collar, cutting in a clockwise or counter-clockwise direction.

5. Clean equipment and return to proper place in storage area.

Turfgrass Unit: MAINTENANCE OF GREENS AND TEES

Competency Task: MOW APRONS

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated green requiring apron to be mowed, and appropriate mower, mow apron. For satisfactory performance, apron will be mowed according to specifications provided by the instructor.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	ILLINOIS 498 'Using Power Lawn Mowers Safely' (slidefilm/slideset)
	3) Read subject-matter units	3) Notes	
	4) Group discussion - apron mowing procedures	4) Participation	KENTUCKY GG-54 'Mowing Grass' (module)
	5) Demonstration - golf course worker/instructor	5) Attendance	OHIO 'Mowers' (student manual)
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	Golf Course Worker Performance Guide

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Performance Guide

MOW APRONS

1. Perform service check on mower.

2. Inspect area for debris, pop-up sprinkler heads.

3. Approaching the green from the rear, mow apron in a clockwise or counterclockwise direction.

4. Wash mower and return to proper place in storage area.

Turfgrass Unit: MAINTENANCE OF GREENS AND TEES

Competency Task: RELOCATE CUPS

Performance Objective	Learning Activities	Evaluation	Resources
Given a golf green requiring relocation of the cup and the necessary tools, remove and relocate the cups. For satisfactory performance, cup relocation must have instructor approval.	1) Read appropriate selections from Master Resouce List	1) Notes	Selections from Master Resource List
	2) Group discussion - cup relocation procedures	2) Participation	Golf Course Worker
	3) Demonstration - golf course worker/instructor	3) Attendance	Performance Guide
	4) Complete Performance Objective	4) Performance Guide/ Instructor Approval	

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Performance Guide

RELOCATE CUPS

1. Use cup cutter to cut new hole.

2. Use cup puller to remove cup.

3. Plug old hole using turf from new hole, leaving a smooth, even and level surface.

4. Place cup in new hole in such a way that it makes a level plane with the green surface with its lip flush with ground level.

Turfgrass Unit: MAINTENANCE OF GREENS AND TEES

Competency Task: RELOCATE TEE MARKERS

Performance Objective	Learning Activities	Evaluation	Resources
Given a tee area where markers require relocation, relocate markers according to P.G.A. (Professional Golf Association) regulations, and course standards for par. For satisfactory performance, the tee markers will be relocated according to P.G.A. regulations, course standards for par, and instructor approval.	1) Read appropriate selections from Master Resource List 2) Group discussion - tee marker relocation procedures 3) Demonstration - golf course worker/instructor 4) Complete Performance Objective	1) Notes 2) Participation 3) Attendance 4) Performance Guide/ P.G.A. Regulations/ Course Standards for Par/Instructor Approval	Selections from Master Resource List Golf Course Worker P.G.A. Regulations Course Standards Performance Guide

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Performance Guide

RELOCATE TEE MARKERS

1. Inspect tee area to determine condition of turf on the tee area.

2. Select best area for relocation of markers.

3. Relocate markers to allow sufficient playing room with the line of sight at right angles to the direction of play. Tee markers are always placed based on:

   a. turf condition
   b. weather condition
   c. cup location
   d. wind direction
   e. standards for par

Turfgrass Unit: MAINTENANCE OF GREENS AND TEES

Competency Task: REPLACE TEE MARKERS

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated area on the golf course where the markers have been damaged or lost, and a supply of new tee markers, make the necessary replacements. For satisfactory performance, replacement of tee markers must have instructor approval.	1) Read appropriate selections from Master Resource List 2) Demonstration - golf course worker/instructor 3) Complete Performance Objective	1) Notes 2) Attendance 3) Performance Guide/ Instructor Approval	Selections from Master Resource List Golf Course Worker Performance Guide

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Performance Guide

REPLACE TEE MARKERS

1. Inspect area to identify tee markers that are either damaged or missing.

2. Replace tee markers needing to be replaced.

Turfgrass Unit: MAINTENANCE OF GREENS AND TEES

Competency Task: IRRIGATE GREENS WITH A MANUAL SYSTEM

Performance Objective	Learning Activities	Evaluation	Resources
Given a green requiring irrigation, hoses and various sprinkler heads, irrigate the green. For satisfactory performance, all items on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List Manufacturer's Recommendations ILLINOIS 632 'Water Features, Irrigation Materials' (slideset) Golf Course Worker Performance Guide Instructor Checklist
	2) View filmstrips/slides	2) Notes	
	3) Group discussion - manual green irrigation, selection of sprinkler heads, length of time sprinklers should operate.	3) Participation	
	4) Demonstration - golf course worker/instructor	4) Attendance	
	5) Complete Performance Objective	5) Performance Guide/ Instructor Checklist	

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Performance Guide IRRIGATE GREENS WITH A MANUAL SYSTEM

1. Select sprinkler heads designated for use on greens.

2. Locate water outlet or receptacle.

3. Connect sprinkler to outlet.

4. Turn on sprinkler and allow the sprinkler to operate for period of time specified by instructor. **Check sprinklers to make sure they are rotating and not clogged.

5. Un-couple sprinklers, return sprinkler heads and hoses to place of storage.

Instructor Checklist

IRRIGATE GREENS WITH A MANUAL SYSTEM

ACCEPTABLE	
	1. Sprinkler heads selected were appropriate for area to be irrigated.
	2. Outlets were located and heads were properly connected.
	3. Pump pressure in irrigation system was checked.
	4. Sprinklers were operated for designated time period., with sprinklers being checked to make sure they are rotating and not clogged.
	5. Sprinkler heads and hoses were removed and returned to proper place in storage area.

Turfgrass Unit: MAINTENANCE OF GREENS AND TEES

Competency Task: APPLY FERTILIZER TO GREENS

Performance Objective	Learning Activities	Evaluation	Resources
Given a golf green to which a prescribed amount of granular fertilizer is to be applied, the fertilizer and a pre-calibrated spreader, apply the fertilizer. For satisfactory performance, the amount of fertilizer applied must not vary more than ±10 percent from the prescribed amount, it must be distributed uniformly and evenly over the entire area of the green, and all items on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resouce List	1) Notes	Selections from Master Resource List
	2) Read subject-matter units	2) Notes	Fertilizer Manufacturer's Recommendations
	3) View filmstrips/slides	3) Notes	Golf Green Fertilization Schedule
	4) Review Manufacturer's recommendations	4) Notes	ILLINOIS
	5) Review fertilization schedule	5) Notes	443 'Calibrating a Granular Applicator' (slidefilm/slideset)
	6) Demonstration - golf course worker/instructor	6) Attendance	4010a 'Planning a Fertilizer Program' (subject-matter unit)
	7) Complete Performance Objective	7) Performance Guide/ Instructor Checklist	KENTUCKY
			GG-2 'Developing Fertilization Schedules' (module)
			GG-9 'Applying Fertilizer' (module)
			GG-10 'Cleaning & Lubricating Fertilizer Applicators' (module)
			Golf Course Worker

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Turfgrass Unit: MAINTENANCE OF GREENS AND TEES

Competency Task: APPLY FERTILIZER TO GREENS - 2

Performance Objective	Learning Activities	Evaluation	Resources
			Performance Guide
			Instructor Checklist

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Performance Guide

APPLY FERTILIZER TO GREENS

1. Adjust applicator to required setting.
2. Divide fertilizer into two equal quantities.
3. Fill applicator on fairway to prevent damage to greens if fertilizer spills.
4. Apply first quantity of fertilizer in successive straight lines in an east to west pattern.
5. Apply second quantity of fertilizer at right angles to that previously applied.
6. Wash applicator with water, dry, and apply a protective film of oil to all moving parts.

Instructor Checklist APPLY FERTILIZER TO GREENS

ACCEPTABLE

1. Area of each green in total square feet was carefully determined and recorded.
2. Required amount of each specified fertilizer per 1,000 square feet of green wa accurately calculated and weighed out.
3. Applicator was filled on fairway.
4. Applicator was adjusted to deliver about 1/2 of the required amount of granular fertilizer when moving back and forth across the green north and south, or east and west, with the remainder being applied at right angles to it.
5. Applicator was correctly operated in applying the fertilizer so as to get an even distribution over the entire area.
6. Care was taken in filling the hopper to avoid spilling the fertilizer.

ACCEPTABLE

7. If fertilizer was spilled on the green it was picked up as carefully as possible.
8. Applicator was properly cleaned, treated and stored for future use following use.

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Maintenance of Fairways, Roughs and Traps

- Mow Fairways, *page 72*
- Mow Roughs, *page 74*
- Trim Sand Traps, *page 76*
- Edge Sand Traps, *page 78*
- Irrigate Fairways with a Manual System, *page 80*
- Apply Fertilizer to Fairways, *page 83*
- Add Sand to Traps, *page 86*
- Hand Rake Sand Traps, *page 88*
- Power Rake Sand Traps, *page 90*

Maintenance of Fairways, Roughs and Traps

Turfgrass Unit: MAINTENANCE OF FAIRWAYS, ROUGH, AND TRAPS

Competency Task: MOW FAIRWAYS

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated fairway area to be mowed and a properly sharpened and adjusted tractor drawn gang type mower, and tractor, mow fairways obtaining good cutting quality over the entire area. For satisfactory performance, the fairway should show no indication of scalping and will meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Read Manufacturer's Operating Instructions	2) Notes/Ability to operate equipment properly and safely	Manufacturer's Operating Instructions
	3) Group discussion - equipment use, mower adjustment, and procedures used in mowing fairways	3) Participation	Golf Course Worker
	4) Demonstration - golf course worker/instructor	4) Attendance	Performance Guide
	5) Complete Performance Objective	5) Performance Guide/ Instructor Approval	

Performance Guide MOW FAIRWAYS

1. Perform service check on tractor and mower.

2. Attach mower to tractor.

3. Mow fairway in a prescribed direction.

4. Clean mower blades after completing the mowing of fairway and return.

** Direction of mowing should be varied from one mowing to another.

Turfgrass Unit: MAINTENANCE OF FAIRWAYS, ROUGH, AND TRAPS

Competency Task: MOW ROUGHS

Performance Objective	Learning Activities	Evaluation	Resources
Given unmowed roughs and a designated mowing unit, mow roughs. For satisfactory performance, a uniform cut over the entire area of the rough should be maintained in the mowing process. The unmowed area should be clean of debris and present a neat appearance with no area remaining unmowed.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
			ILLINOIS
	2) View filmstrips/slides	2) Notes	498 'Using Power Lawn Mowers Safely' (slidefilm/slideset)
	3) Read subject-matter units	3) Notes	
	4) Group discussion - equipment use, required height of mowing blade, and procedures used to mow roughs	4) Participation	KENTUCKY
			GG-54 'Mowing Grass' (module)
			OHIO
	5) Demonstration - golf course worker/instructor	5) Attendance	'Mowers' (student manual)
			Golf Course Worker
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	Performance Guide

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Performance Guide — MOW ROUGHS

1. Perform service check on tractor and mower.
2. Attach mower to tractor.
3. Adjust mower blade so that adequate cutting quality can be assured.
4. Mow roughs.
5. Clean mower unit after mowing and return equipment to storage area.

Turfgrass Unit: MAINTENANCE OF FAIRWAYS, ROUGH, AND TRAPS

Competency Task: TRIM SAND TRAPS

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated golf green with sand traps where the adjacent lips and fingers need to be mowed or trimmed, and the necessary tools and equipment, trim the traps. For satisfactory performance, turf that has been mowed or trimmed must not be any shorter than the adjacent aprons and of uniform height.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Read Manufacturer's Operating Instructions	2) Notes/Ability to operate equipment properly and safely	Manufacturer's Operating Instructions
	3) Group discussion-equipment use and procedures used for trimming sand traps	3) Participation	Golf Course Worker
	4) Demonstration - golf course worker/instructor	4) Attendance	Performance Guide
	5) Complete Performance Objective	5) Performance Guide/ Instructor Approval	

Performance Guide

TRIM SAND TRAPS

1. Select proper implement for mowing lips and fingers surrounding traps.

2. Perform service check on flying or rotary mower.

3. Mow around perimeter of traps wherever needed, finishing the job with shears if necessary.

4. Clean mower and other equipment and then return to storage area for future use.

Turfgrass Unit: MAINTENANCE OF FAIRWAYS, ROUGH, AND TRAPS

Competency Task: EDGE SAND TRAPS

Performance Objective	Learning Activities	Evaluation	Resources
Given designated sand traps to be edged, a mechanical edger, a selection of other appropriate pieces of equipment, edge the traps. For satisfactory performance, the walls or banks must form an even and uniform contour with the adjacent turf, and sand trap walls must not only be smooth and well defined, but free from weeds, with the contour unaltered from its original shape.	1) Read appropriate selections from Master Resource List 2) Read Manufacturer's Operating Instructions 3) Group discussion-equipment use and procedures used to edge sand trap 4) Demonstration - golf course worker/instructor 5) Complete Performance Objective	1) Notes 2) Notes/Ability to operate equipment properly and safely 3) Participation 4) Attendance 5) Performance Guide/ Instructor Approval	Selections from Master Resource List Manufacturer's Operating Instructions Golf Course Worker Performance Guide

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Performance Guide

EDGE SAND TRAPS

1. Determine tools and equipment needed for edging.

2. Service equipment.

3. Edge sand traps:
   a. Cut invading grasses to give a clear outline.
   b. remove weeds and invading grass as necessary to restore trap to its original shape and condition.

4. Dispose of weeds and grasses removed in edging process.

5. Rake trap surface where disturbed

6. Clean tools and other equipment, returning them to their proper place when the job is finished.

Turfgrass Unit: MAINTENANCE OF FAIRWAYS, ROUGH, AND TRAPS

Competency Task: IRRIGATE FAIRWAYS WITH A MANUAL SYSTEM

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated fairway where sprinklers are to be attached and allowed to run for a specified amount of time, and a functioning irrigation system, select appropriate sprinkler heads and irrigate the fairway. For satisfactory performance, all water outlets are to be located and coupled, selected sprinklers will deliver a sufficient supply of water to cover the entire area for the specified amount of time, and all items on the instructor checklist must be rated 'acceptable.	1) Read appropriate selections from Master Resource List 2) View filmstrip/slides 3) Group discussion-manual fairway irrigation, selection of sprinkler heads, and length of time sprinklers should operate 4) Demonstration - golf course worker/instructor 5) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Attendance 5) Performance Guide/ Instructor Checklist	Selections from Master Resource List Manufacturer's Recommendations ILLINOIS 632 'Water Features, Irrigation Materials' (slideset) Golf Course Worker Performance Guide Instructor Checklist

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1. Select sprinkler heads designated for use on fairways.

2. Locate water outlets or receptacles for attaching sprinklers.

3. Connect spriknlers to outlets.

4. Allow sprinkler to operate for designated period of time to deliver the required amount of water. **Check sprinkler heads to make sure they aré rotating and not clogged.

5. Turn off water and un-couple sprinklers at end of allotted time.

6. Store sprinklers appropriately when not in use.

Instructor Checklist

IRRIGATE FAIRWAYS WITH A MANUAL SYSTEM

ACCEPTABLE

1. Sprinkler heads selected were appropriate for area to be irrigated.
2. Outlets were located and heads were properly connected.
3. Pump pressure in irrigation system was checked.
4. Sprinklers were operated for designated time period, with sprinkler heads being checked to make sure they are rotating and not clogged.
5. Sprinkler heads were removed and returned to proper storage area.

Turfgrass Unit: MAINTENANCE OF FAIRWAYS, ROUGH, AND TRAPS

Competency Task: APPLY FERTILIZER TO FAIRWAYS

Performance Objective	Learning Activities	Evaluation	Resources
Given a fairway to be fertilized, a tractor drawn rotary fertilizer spreader, and a specified granular fertilizer, apply the fertilizer. For satisfactory performance, fertilizer is to be uniformly applied at ±10 percent of the rate specified by the instructor.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	Manufacturer's Operating Instructions
	3) Read subject-matter units	3) Notes	Fertilizer Manufacturer's Recommendations
	4) Read Manufacturer's Operating Instructions	4) Notes/Ability to operate equipment properly and safely	ILLINOIS 443 'Calibrating a Granular Applicator' (slidefilm/slideset)
	5) Review Manufacturer's recommendations	5) Notes	4010a 'Planning a Fertilizer Program' (subject-matter unit)
	6) Review Fertilization schedule	6) Notes	KENTUCKY
	7) Demonstration - golf course worker/instructor	7) Attendance	GG-2 'Developing a Fertilization Schedule' (module)
	8) Complete Performance Objective	8) Performance Guide/ Instructor Approval	GG-9 'Applying Fertilizer' (module)
			GG-10 'Cleaning & Lubricating Fertilizer Applicators' (module)
			Fairway Fertilization Schedule

Turfgrass Unit: MAINTENANCE OF FAIRWAYS, ROUGH, AND TRAPS

Competency Task: APPLY FERTILIZER TO FAIRWAYS - 2

Performance Objective	Learning Activities	Evaluation	Resources
			Golf Course Worker Performance Guide

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Performance Guide

APPLY FERTILIZER TO FAIRWAYS

1. Service tractor as required.

2. Calibrate spreader to apply the specified amount of fertilizer per acre or per 10,000 square feet of area.

3. Apply fertilizer in straight lines moving in the configuration of the fairway with consideration of wind direction.

4. Clean fertilizer spreader immediately following use.

5. Return spreader, tractor and extra materials to designated storage area.

Turfgrass Unit: MAINTENANCE OF FAIRWAYS, ROUGH, AND TRAPS

Competency Task: ADD SAND TO TRAPS

Performance Objective	Learning Activities	Evaluation	Resources
Given designated sand traps on a golf course, add sand to traps as needed. For satisfactory performance, there must be 6-8 inches of sand throughout the trap. The entire area of the trap must be left in a smooth and playable condition when the job is completed, and meet instructor approval.	1) Read appropriate selections from Master Resource List 2) Group discussion - adding sand to traps, raking traps, and finished condition of traps 3) Demonstration - golf course worker, instructor 4) Complete Performance Objective	1) Notes 2) Participation 3) Attendance 4) Performance Guide/ Instructor Approval	Selections from Master Resource List Golf Course Worker Performance Guide

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Performance Guide

ADD SAND TO TRAPS

1. Obtain sand for traps by use of truckster, front end loader, pick up truck or other suitable vehicle.

2. Add the amount of sand needed to designated traps.

3. Distribute the sand evenly with shovel and then hand rake the trap so that the trap is left in a smooth playable condition.

Turfgrass Unit: MAINTENANCE OF FAIRWAYS, ROUGH, AND TRAPS

Competency Task: HAND RAKE SAND TRAPS

Performance Objective	Learning Activities	Evaluation	Resources
Given a special hand rake and specified sand traps to be raked, rake the traps. For satisfactory performance, traps must be raked systematically so all footprints, holes, and uneven areas are removed, and meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List Golf Course Worker Performance Guide
	2) Group discussion - procedures used to rake traps and finished condition of traps	2) Participation	
	3) Demonstration - golf course worker/instructor	3) Attendance	
	4) Complete Performance Objective	4) Performance Guide/ Instructor Approval	

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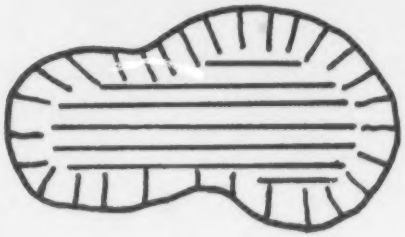
Performance Guide

HAND RAKE TRAPS

1. Push rake away to fill in uneven areas, keeping rake as parallel to surface as possible.
2. Pull rake back to smooth surface.
3. Repeat until perfectly level.
4. Move to left or right, not backwards, until trap has been raked all across.
5. After completing major portion of trap, touch up edges with even strokes. (see diagram)
6. Clean and return hand rake to storage area.



Turfgrass Unit: MAINTENANCE OF FAIRWAYS, ROUGH, AND TRAPS

Competency Task: POWER RAKE SAND TRAPS

Performance Objective	Learning Activities	Evaluation	Resources
Given designated sand traps to be raked and a power rake, rake traps. For satisfactory performance, all footprints, holes, or other irregularities which might interfere with play must be removed and meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Read Manufacturer's Operating Instructions	2) Notes/Ability to operate equipment properly and safely	Manufacturer's Operating Instructions
	3) Group discussion - power rake equipment, use, and procedure used to rake traps	3) Participation	Golf Course Worker
	4) Demonstration - golf course worker/instructor	4) Attendance	Performance Guide
	5) Complete Performance Objective	5) Performance Guide/ Instructor Approval	

1. Service power sand trap rake unit.

2. Enter trap from lowest point and starting on its center line, rake the trap working toward the outside.

3. Clean, service and restore power rake unit to storage area.

Maintenance of Water Hazards

- Mow and Edge Banks of Water Hazards, *page 92*
- Control Aquatic Weeds with Herbicides, *page 94*

Maintenance of Water Hazards

Turfgrass Unit: MAINTENANCE OF WATER HAZARDS

Competency Task: MOW AND EDGE BANKS OF WATER HAZARDS

Performance Objective	Learning Activities	Evaluation	Resources
Given one or more water hazards and surrounding areas needing to be mowed, trimmed, and edged, and the necessary tools and equipment, mow, trim, and edge the banks. For satisfactory performance, excessive vegetative growth between the water and regular turf must be cut as close to the ground as possible, trimmed and edged to form a well defined line between the water in the hazard and the adjacent turf.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS 498 'Using Power Lawn Mowers Safely' (slidefilm/slideset) KENTUCKY GG-54 'Mowing Grass' (module) Golf Course Worker Performance Guide
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Group discussion - equipment use, and procedures used to mow, trim and edge water hazard banks	4) Participation	
	5) Demonstration - golf course worker/instructor	5) Attendance	
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	

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Performance Guide

MOW AND EDGE BANKS OF WATER HAZARDS

1. Inspect area to be mowed and edged to determine tools and equipment needed.

2. Mow banks with rotary mower using hand shears, sickle or scythe where necessary.

3. Edge banks with edger after mowing is finished.

4. Dispose of excessive cuttings and vegetative accumulations.

5. Clean equipment and return to designated place in storage area when job is completed.

Turfgrass Unit: MAINTENANCE OF WATER HAZARDS

Competency Task: CONTROL AQUATIC WEEDS WITH HERBICIDES

Performance Objective	Learning Activities	Evaluation	Resources
Given a lake or stream infested with aquatic weeds and needing treatment, the necessary equipment and chemicals, spray the infested area. For satisfactory performance, pesticide application guidelines must be followed and all items on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	ILLINOIS
	3) Read subject-matter units	3) Notes	1108-1.1 'Understanding & Safe Use of Pesticides' (slidefilm/slideset)
	4) Group discussion - supplies needed, procedure used to control aquatic weeds	4) Participation	1108-1.2 'Selecting & Handling Pesticides' (slidefilm/slideset)
	5) Group review - chemical manufacturer's information, safety precautions	5) Participation	1108-1.3 'Calibrating & Applying Pesticides Safely' (slidefilm/slideset)
	6) Complete Performance Objective	6) Performance Guide/ Instructor Checklist	795 'Control of Aquatic Weeds' (slidefilm)
			KENTUCKY
			GG-71 'Applying Weed Killing Compounds' (module)
			Chemical Manufacturer's Information
			Performance Guide
			Instructor Checklist

1. Check boat (if used) and hand sprayer to be used in spraying operation.

2. Spray the area in accordance with lake and cut applicator specifications, following a systematic pattern.

3. Wash out boat and spray equipment following use and return the same to their proper place.

ACCEPTABLE	
	1. Checked out boat carefully and followed all other preparatory safety precautions for doing the job.
	2. Followed systematic procedure in applying aquatic herbicides.
	3. Used sprayer and other equipment effectively.
	4. Cleaned and serviced equipment thoroughly following use and prior to storage.
	5. Disposed of aquatic weeds as they died and performed well in other follow-up operations.

Maintenance of Facilities

- Pick Up Litter from Grounds and Playing Area, *page 97*
- Repair Irrigation Pipes, *page 99*
- Install Irrigation Valves, *page 101*
- Extend Irrigation Systems, *page 103*
- Install Tile Drains, *page 105*
- Service and Maintain Golf Ball Washers, *page 108*
- Repair Benches, *page 110*
- Repair Signs on Golf Course, *page 112*
- Repair Cart Paths, *page 115*

Maintenance of Facilities

Turfgrass Unit: MAINTENANCE OF FACILITIES

Competency Task: PICK UP LITTER FROM GROUNDS AND PLAYING AREA

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated area on the golf course strewn with litter and the necessary tools, remove all litter from the area and dispose of it. For satisfactory performance, the area must be sufficiently free from litter and meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List KENTUCKY
	2) Read subject-matter units	2) Notes	GG-46 'Cleaning Grounds of Leaves and Litter' (module)
	3) Group discussion - importance of clean grounds (attitude)	3) Participation	Performance Guide
	4) Complete Performance Objective	4) Performance Guide/ Instructor Approval	

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Performance Guide

PICK UP LITTER FROM GROUNDS AND PLAYING AREA

1. Gather equipment necessary for litter pick up.
2. Identify areas where litter is to be removed.
3. Pick up litter.
4. Dispose of litter.
5. Return equipment to its proper place.

Turfgrass Unit: MAINTENANCE OF FACILITIES

Competency Task: REPAIR IRRIGATION PIPES

Performance Objective	Learning Activities	Evaluation	Resources
Given a particular area on the golf course with a damaged or leaking section of irrigation pipe, necessary tools, sealant and extra pipe, locate, dig up and repair or replace the leaking pipe. For satisfactory performance, the irrigation system must work as designed with no leaks and must have instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	ILLINOIS 632 'Water Features, Irrigation Materials' (slidefilm/slideset)
	3) Read subject-matter units	3) Notes	
	4) Group discussion - irrigation systems, components, and procedures used to repair irrigation pipes	4) Participation	480 'Identification of Pipe and fittings' (slidefilm/slideset)
	5) Demonstration - golf course worker/instructor	5) Attendance	KENTUCKY GG-47 'Servicing Irrigation Systems' (module)
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	Irrigation System Manual Golf Course Worker Performance Guide

Performance Guide

REPAIR IRRIGATION PIPES

1. Locate damaged or leaking irrigation pipe.
2. Cut off water.
3. Remove sod above the problem pipe.
4. Dig up damaged pipe.
5. Repair leak or replace damaged section of pipe.
6. Test to make sure that there are no leaks.
7. Level the backfilled area and resod after soil in trench is sufficiently compacted.
8. Clean all tools and equipment used and return them to their proper place in the storage area.

Turfgrass Unit: MAINTENANCE OF FACILITIES

Competency Task: INSTALL IRRIGATION VALVES

Performance Objective	Learning Activities	Evaluation	Resources
Given a functional irrigation system, irrigation valves, and the necessary installation equipment, install irrigation valves. For satisfactory performance, the valves will operate as designed, with no leaks occurring in adjoining valves or other parts of the system and the work completed will meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS 632 'Water Features, Irrigation Materials' (slidefilm/slideset) 480 'Identification of Pipe and Fittings' (slidefilm/slideset) KENTUCKY GG-47 'Servicing Irrigation Systems' (module) Irrigation System Manual Golf Course Worker Performance Guide
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Review irrigation system manual	4) Notes	
	5) Demonstration - golf course worker/instructor	5) Attendance	
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	

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Performance Guide

INSTALL IRRIGATION VALVES

1. Install valves to irrigation pipe and the hydraulic lines according to specifications.

2. Test valves to insure that they function properly.

3. Clean all tools and equipment following use and return them to their designated place in the storage area.

Turfgrass Unit: MAINTENANCE OF FACILITIES

Competency Task: EXTEND IRRIGATION SYSTEMS

Performance Objective	Learning Activities	Evaluation	Resources
Given an area where the existing irrigation system needs to be extended, a drawing or blueprint, irrigation pipe, sprinklers, a trenching machine and other necessary equipment, extend the existing system so water will be supplied to a previously unirrigated area. For satisfactory performance, the extended system must supply the necessary irrigation water as planned, meet the prescribed engineering specifications, and instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	ILLINOIS 632 'Water Features, Irrigation Materials' (slidefilm/slideset)
	3) Read subject-matter units	3) Notes	480 'Identification of Pipe and Fittings' (slidefilm/slideset)
	4) Review irrigation system manual	4) Notes	KENTUCKY
	5) Review irrigation system extension blueprints	5) Notes/Ability to interpret blueprints	GG-47 'Servicing Irrigation Systems' (module)
	6) Group discussion - review blueprints, materials needed and procedures used for extending irrigation system	6) Participation	Irrigation System Manual Irrigation System Extension Blueprints
	7) Field trip - golf course/grounds area in process of extending irrigation system	7) Attendance	Performance Guide
	8) Complete Performance Objective	8) Performance Guide/ Instructor Approval	

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1. Identify areas needed additional irrigation water.
2. Using a sketch map, irrigation plan or blueprint, gather the equipment and materials required to make the necessary additions to the existing irrigation system.
3. Blueprint or sketch map.
4. Install pipes and sprinklers according to specifications.
5. Test system and check for leaks or malfunctions.
6. Backfill trenches and level backfilled areas.
7. Clean all tools and equipment and store them in their designated place.
8. Re-sod the backfilled areas.

Turfgrass Unit: MAINTENANCE OF FACILITIES

Competency Task: INSTALL TILE DRAINS

Performance Objective	Learning Activities	Evaluation	Resources
Given a golf course area where tile drains are to be installed, a blueprint, functional transit or engineering level, steel tape, the required tile and other necessary equipment, install a tile drainage system. For satisfactory performance, each item on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	ILLINOIS 436 'Using the Steel Tape in Surveying' (slidefilm)
	3) Group discussion - drainage grades, materials needed and procedures used to install tile drainage systems	3) Participation	438 'Using the Level in Farm Surveying' (slidefilm)
	4) Complete Performance Objective	5) Performance Guide/ Instructor Checklist	Performance Guide Instructor Checklist

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Performance Guide

INSTALL TILE DRAINS

1. Determine the precise location for placement of tile.
2. Determine the grade at which tiles are to be laid.
3. Lay tile at depth specified.
4. Backfill tile trench with pea gravel, or other designated materials required to insure drainage.
5. Level and resod backfilled trenches.
6. Cradle transit or level in its box to protect it against damage following use.
7. Clean all tools and/or equipment following use and return them to their proper place.

Instructor Checklist

INSTALL TILE DRAINS

ACCEPTABLE

1. Blueprint was carefully studied and correctly interpreted.
2. Transit was properly leveled prior to use and checked repeatedly while in use to insure accuracy of readings.
3. Readings were double checked for accuracy.
4. Grade stakes were set and elevations determined prior to placement of tile.
5. Tile was put in place and carefully laid at desired grade.
6. Gravel or other material used as backfill in trench.

ACCEPTABLE

7. Additional gravel was placed over and around tile before trench was backfilled with dirt.
8. The gradient of the tile was according to blueprint and sufficient to provide the required drainage.
9. Laterals were spaced according to blueprint specifications so as to adequately provide for flow of drainage water.
10. At least two feet of gravel or other suitable material was used below, around and above the tile.
11. Following the backfilling of the trench and levelling trenched areas were resodded.
12. All tools and equipment were cleaned and serviced when the job was completed prior to storage.

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Turfgrass Unit: MAINTENANCE OF FACILITIES

Competency Task: SERVICE AND MAINTAIN GOLF BALL WASHERS

Performance Objective	Learning Activities	Evaluation	Resources
Given three golf ball washers, service and repair as necessary. For satisfactory performance, cleansing agent must be maintained at appropriate level in the ball washer, towels must be changed daily, and brushes and plunger mechanism must function effectively.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Review Manufacturer's Operating/Service Manual	2) Notes/Ability to service equipment properly	Manufacturer's Operating/ Servicing Manual Local Golf Course
	3) Complete Performance Objective	3) Performance Guide/ Instructor Approval	Performance Guide

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1. Determine ratio of detergent or soap and water. (see directions on pre-mix containers.)

2. Fill ball washers with pre-mix solution up to the over flow mark.

3. Take soiled towel and thoroughly wipe and clean outside of ball washer after adding soap and water.

4. Attach fresh clean towels.

**in Spring, empty water with anti-freeze in it on sand trap or gravel area.

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Turfgrass Unit: MAINTENANCE OF FACILITIES

Competency Task: REPAIR BENCHES

Performance Objective	Learning Activities	Evaluation	Resources
Given an area on a golf course where one or more benches is in need of repair, the tools, lumber and other materials required to do the job, select the needed tools and make the necessary repairs on these benches. For satisfactory performance, the benches must be safe, free from rough edges or splinters that would damage clothing, and materials used in making repairs must be of the same kind and quality as the original materials.	1) Read appropriate selections from Master Resource List 2) Review carpentry/ construction references 3) Complete Performance Objective	1) Notes 2) Notes 3) Performance Guide/ Instructor Approval	Selections from Master Resource List Carpentry References Performance Guide

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Performance Guide

REPAIR BENCHES

1. Inspect benches and determine the nature of the repairs needed.

2. Replace broken boards as necessary.

3. Re-paint boards on benches where necessary.

4. Dispose of old boards or trash accumulated in making the repairs.

5. Clean tools and equipment used, returning tools and left over materials if any, to their proper place when job is finished.

Turfgrass Unit: MAINTENANCE OF FACILITIES

Competency Task: REPAIR SIGNS ON GOLF COURSE

Performance Objective	Learning Activities	Evaluation	Resources
Given specified areas on the golf course where certain signs need to be repaired, select the appropriate tools and equipment and make the necessary repairs to the signs. For satisfactory performance, each item on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Review carpentry/construction references	2) Notes	Carpentry References
	3) Complete Performance Objective	3) Performance Guide/ Instructor Checklist	Performance Guide
			Instructor Checklist

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Performance Guide

REPAIR SIGNS ON GOLF COURSE.

1. Inspect area to determine the nature and extend of repairs needed.

2. Select posts, paint, nails, lumber and/or other materials needed to do the job.

3. Select tools and equipment needed.

4. Make the repairs to all signs in the designated area which need to be repaired.

5. Upon completion of the job return all tools, equipment and left over materials to their proper place.

Instructor Checklist

REPAIR SIGNS ON GOLF COURSE

ACCEPTABLE

1. A survey of the area was made to determine the extent and nature of repairs needed.
2. Tools, materials and equipment selected were adequate and appropriate for making the repairs.
3. Repairs met the necessary standards of quality and were accomplished within the allocated time period.
4. Any trash and debris accumulated in making repairs was disposed of in a satisfactory manner.
5. Tools and equipment used were cleaned as necessary and returned to appropriate places after the job was completed.
6. Unused materials were properly stored for future use.

Turfgrass Unit: MAINTENANCE OF FACILITIES

Competency Task: REPAIR CART PATHS

Performance Objective	Learning Activities	Evaluation	Resources
Given a specified portion or area of a golf course where cart paths need to be repaired and a variety of tools, equipment and materials such as sand, gravel and asphalt, from which choices can be made, select the items needed and proceed to make the repairs. For satisfactory performance, each item on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List 2) Read subject-matter units 3) Review walkway/paving references 4) Complete Performance Objective	1) Notes 2) Notes 3) Notes 4) Performance Guide/ Instructor Checklist	Selections from Master Resource List KENTUCKY GG-39 'Repairing Asphalt and Concrete Surfaces' (module) Walkway/Paving References Performance Guide Instructor Checklist

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Performance Guide

REPAIR CART PATHS

1. Inspect paths to determine nature and extent of repairs needed.

2. Collect tools, equipment and materials needed to make the necessary repairs.

3. Make repairs (i.e. fill pot holes, low spots or washed out areas).

4. Clean all tools and equipment used, returning same to their designated places in the storage areas when job is completed.

Instructor Checklist

REPAIR CART PATHS

ACCEPTABLE

1. Area where repairs were to be made was carefully inspected to determine the specifics of the repairs needed.
2. Tools, equipment and materials selected were appropriate for making these repairs.
3. Work was done systematically without undue delay.
4. Repairs that were made met the required standards of quality.
5. No unnecessary tools, equipment and materials were checked out for use.
6. All tools and equipment were properly cleaned after completion of the job and returned to their proper place.
7. Materials left over from the job, if any, were properly cared for and stored.

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ACCEPTABLE

8. Accumulations of replaced or waste materials, if any, were properly disposed of or hauled away.

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Sod Production

Ground Preparation

- Plow/Disk Land, *page 118*
- Level Land for Seedbed Preparation, *page 121*

Ground Preparation

Turfgrass Unit: GROUND PREPARATION

Competency Task: PLOW/DISK LAND

Performance Objective	Learning Activities	Evaluation	Resources
Given a tractor equipped with a 3 point hydraulic hitch, an area of land to be prepared for growing sod, and either a disk or a plow, break the land so that it can be worked into a satisfactory seedbed for establishing sod. For satisfactory performance, the land must be plowed/disked to a depth of a least 4-6 inches and all items on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List 2) Read Manufacturer's Operating Instructions 3) Group discussion - tractor safety and care 4) Group discussion - plow/disk patterns 5) Complete Performance Objective	1) Notes 2) Notes/Ability to operate equipment properly and safely 3) Participation 4) Participation 5) Performance Guide/ Instructor Checklist	Selections from Master Resource List Manufacturer's Operating Instructions Sod Farm Performance Guide Instructor Checklist

1. Service tractor, plow or disk.
2. Level and adjust plow or disk.
3. Plow or disk land systematically employing a pattern of operation that best fits the shape, slope and contour of the land.
4. Clean and service equipment and return same to storage area following use.

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Instructor Checklist

PLOW/DISK LAND

ACCEPTABLE

1. Tractor and equipment assigned was properly serviced prior to use.
2. Plow or disk was properly attached to tractor.
3. Plow and/or disk was properly leveled and adjusted for doing the best possible job.
4. Depth of cut met specifications and no areas were left uncut or less level than they were when the operation started.
5. Care was taken to follow all necessary safety precautions.
6. Equipment was adequately cleaned and serviced following use and prior to storage.

Turfgrass Unit: GROUND PREPARATION

Competency Task: LEVEL LAND FOR SEEDBED PREPARATION

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated field, a farm tractor and a suitable land leveler, level the designated field. For satisfactory performance, the leveled field must be smooth throughout, have no holes or visible pockets, and be sufficiently even in its contours to permit close mowing without scalping.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Read Manufacturer's Operating Instructions	2) Notes/Ability to operate equipment properly and safely	Manufacturer's Operating Instructions Sod Farm
	3) Complete Performance Objective	3) Performance Guide/ Instructor Approval	Performance Guide

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Performance Guide

LEVEL LAND FOR SEEDBED PREPARATION

1. Service tractor to be used and connect implement assigned for leveling.

2. Proceed to drag the fields either in lands or by working from one side of the field to the other, swath by swath.

3. Go over the field a second time at right angles to the pattern followed the first time where this is necessary.

Propagation and Growth

- Plant Grass Seed, *page 123*
- Establish Sod by Plugging, *page 126*
- Establish Sod by Sprigging, *page 129*

Propagation and Growth

Turfgrass Unit: PROPAGATION AND GROWTH

Competency Task: PLANT GRASS SEED

Performance Objective	Learning Activities	Evaluation	Resources
Given a well prepared seedbed, gravity or cyclone-type seeders, seed type and rate of application and other necessary equipment, plant the specified seed. For satisfactory performance, all items on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List ILLINOIS 653 'Seed Structure & Identification of Cool Season Turfgrasses' (slidefilm/slideset)
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Read Seed manufacturer's instructions	4) Notes	KENTUCKY GG-11 'Sowing Lawn' (module) Seed Manufacturer's Instructions Sod Farm Performance Guide Instructor Checklist
	5) Complete Performance Guide	5) Performance Guide/ Instructor Checklist	

Performance Guide

PLANT GRASS SEED

1. Inspect the field or land area to be seeded to determine the conditions and the type of seeder that should be used.

2. Proceed to plant the grass following whatever practices apply to the existing conditions.

3. Clean all tools and equipment used and return them to their designated place when grass has been planted.

Instructor Checklist PLANT GRASS SEED

ACCEPTABLE

1. Condition of area to be seeded was determined prior to selection of seeder and other equipment.
2. The selection of seeder and other equipment was based on field conditions as determined and were suitable.
3. Tractor and other equipment selected for use was adequately serviced and its performance checked prior to use.
4. Seeder was calibrated to deliver the prescribed amount of seed per acre.
5. Seed was planted at proper depth and was evenly and uniformly distributed over entire area.
6. Fertilizer, if not previously added and mixed into soil was applied at the same time or immediately following seeding

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ACCEPTABLE

7. Seed, if not drilled into the soil, was covered at the appropriate depth by means of a very light disking, brush drag or other suitable means.
8. All tools and equipment used were well cleaned following use and returned to their proper place in the storage area.

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Turfgrass Unit: PROPAGATION AND GROWTH

Competency Task: ESTABLISH SOD BY PLUGGING

Performance Objective	Learning Activities	Evaluation	Resources
Given a proper seedbed, the required quantity of good sod for preparation of 'plugs', a given area of land on which turf is to be established by 'plugging' and the necessary tools and equipment, prepare the required plugs and plant them. For satisfactory performance, all items on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List 2) Read subject-matter units 3) Complete Performance Objective	1) Notes 2) Notes 3) Performance Guide/ Instructor Checklist	Selections from Master Resource List ILLINOIS 5008 'Establishing a Lawn' (subject-matter unit) Circ. 1082 'Illinois Lawn Care & Establishment' Sod Farm Performance Guide Instructor Checklist

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Performance Guide

ESTABLISH SOD BY PLUGGING

1. Cut sod into plugs 3-6 inches square.

2. Cut furrows 3 inches deep about 2-3 feet apart.

3. Place plugs in furrows about 14 inches apart and roll area with heavy roller to cover and to insure good soil contact.

4. Clean all tools and equipment used in the plugging operations and return to their proper storage area.

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Instructor Checklist

ESTABLISH SOD BY PLUGGING

ACCEPTABLE

1. Assigned area was carefully inspected to determine what, if any pre-plugging preparation was needed.

2. On land properly prepared for plugging operations except for furrowing, furrows were prepared at the proper depth and frequency to receive sod plugs.

3. Sod plugs of appropriate size and quality were prepared prior to the construction of furrows.

4. Plugs were carefully laid in furrows at proper or pre-assigned intervals.

5. Land was adequately rolled following plugging operations to insure a firm set of the plugs and good root contact with the soil.

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ACCEPTABLE

6. Land which had been plugged was well irrigated as soon as possible after rolling and light irrigations were followed as often as necessary thereafter to maintain viability until turf was established. Small applications of granular fertilizer were also added at about 2 week intervals following planting

7. All tools and equipment used in field operations were always properly cleaned following use and then returned to their appropriate place.

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Turfgrass Unit: PROPAGATION AND GROWTH

Competency Task: ESTABLISH SOD BY SPRIGGING

Performance Objective	Learning Activities	Evaluation	Resources
Given an area where turf is to be established, necessary tools and equipment, and sprigs for sprigging, sprig the area where new sod is to be established. For satisfactory performance, all items on the instructor checklist must be rated 'acceptable'.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List Propagator's Recommendations ILLINOIS 5008 'Establishing a Lawn' (subject-matter unit) OHIO 'Lawn Renovation & Re-establishment' (slides and script) WEST VIRGINIA 'Lawn Establishment' Golf Course Worker Performance Guide Instructor Checklist
	2) View filmstrips/slides	2) Notes	
	3) Read subject-matter units	3) Notes	
	4) Group discussion - equipment needed and procedures used for sprigging turf	4) Participation	
	5) Demonstration - golf course worker/instructor	5) Attendance	
	6) Complete Performance Objective	6) Performance Guide/ Instructor Checklist	

Performance Guide

ESTABLISH SOD BY SPRIGGING

1. Select tractor disk or other suitable equipment for breaking out and destroying old sod.
2. Disk, plow or spade old turf as conditions require.
3. Level land preparatory to sprigging.
4. Apply fertilizers according to soil test requirements and mix the soil.
5. Mark off area for proper spacing and sprig.
6. Use disk to cut sprigs into soil. (For small areas, sprigs may be cut into soil by hand)
7. Roll area following sprigging to insure good soil contact.
8. Clean implements and return to storage.
9. Irrigate sprigged area when job is completed and as often as necessary thereafter until turf is well established.

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Instructor Checklist

ESTABLISH SOD BY SPRIGGING

ACCEPTABLE

1. Equipment chosen for leveling land was suitable and was effectively used.

2. Designated fertilizers were carefully measured and well mixed into topsoil prior to the sprigging operation.

3. Spriggs were uniformly spaced and distributed in furrows over the entire land area.

4. Spriggs were cut into soil by use of disk and roller thereafter to insure good contact of the spriggs with the soil.

5. Sprigged area was irrigated as soon as possible after sprigging and irrigation was repeated as often as required to insure turf establishment.

6. Supplemental applications of fertilizer were applied until turf was established at the desired levels of density and quality.

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ACCEPTABLE

8. All tools and equipment were properly cleaned and returned to their places in the storage area when the sprigging job was completed.

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Harvesting

- Mow Sod, *page 132*
- Roll Sod, *page 134*
- Stack Sod, *page 136*
- Operate a Fork Lift, *page 138*

Harvesting

Turfgrass Unit: HARVESTING

Competency Task: MOW SOD

Performance Objective	Learning Activities	Evaluation	Resources
Given a field of sod to be mowed and either a reel or rotary type mower, mow the field of sod. For satisfactory performance, sod should be cut evenly and uniformly, the grass height should be within ±½ inch of the recommendations of the local cooperative extension service office for the type of turf being harvested, and the mowing must meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) View filmstrips/slides	2) Notes	ILLINOIS 498 'Using Power Lawn Mowers Safely' (slidefilm/slideset)
	3) Read subject-matter units	3) Notes	
	4) Review Manufacturer's Operating Instructions	4) Notes/Ability to operate equipment properly and safely	KENTUCKY GG-54 'Mowing Grass' (module)
	5) Consult Cooperative Extension Service Office	5) Notes/Report findings	OHIO 'Mowers' (student manual)
	6) Complete Performance Objective	6) Performance Guide/ Instructor Approval	Manufacturer's Operating Instructions Sod Farm Cooperative Extension Service Office Performance Guide

1. Service mower and power unit prior to mowing to be certain that it is in good working order and can be operated effectively and safely.

2. Mow sod following a systematic procedure as stipulated by the instructor.

3. Clean equipment thoroughly especially the mower blades, following use.

4. Return all equipment to its designated place of storage.

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Turfgrass Unit: HARVESTING

Competency Task: ROLL SOD

Performance Objective	Learning Activities	Evaluation	Resources
Given a designated field where sod is being prepared for harvesting, a tractor and a heavy duty sod roller, roll the sod. For satisfactory performance, all portions of the field must be rolled and left in a smooth, tight, and even condition when the job is finished, and rolling must meet instructor approval.	1) Read appropriate selections from Master Resource List 2) Review Manufacturer's Operating Instructions 3) Complete Performance Guide	1) Notes 2) Notes/Ability to operate equipment properly and safely 3) Performance Guide/ Instructor Approval	Selections from Master Resource List Manufacturer's Operating Instructions Sod Farm Performance Guide

Performance Guide

ROLL SOD

1. Perform service check on tractor and roller.

2. Roll sod, following a systematic pattern.

3. Go over area a second time at right angles to direction of the first rolling if necessary.

4. Clean equipment after use and return it to its proper storage area.

Turfgrass Unit: HARVESTING

Competency Task: STACK SOD

Performance Objective	Learning Activities	Evaluation	Resources
Given standard sized pallets and a field of sod cut, rolled and ready for stacking, stack the sod on pallets. For satisfactory performance, successive rolls of sod must be laid in such a way that slippage will not be a problem in loading the pallets or in transporting them on rough roads by truck.	1) Read appropriate selections from Master Resource List 2) Demonstration - sod farm stacking procedures 3) Complete Performance Objective	1) Notes 2) Attendance 3) Performance Guide/ instructor Approval	Selections from Master Resource List Sod Farm Performance Guide

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Performance Guide

STACK SOD

1. Check the pallet to make sure it is solid and that there are no broken parts.

2. Pick up rolls of sod and lay them on pallet so that no slippage will occur.

3. Check each stack of sod to make sure it is well balanced on the pallet.

4. Remove sod and re-stack when necessary.

Turfgrass Unit: HARVESTING

Competency Task: OPERATE A FORK LIFT

Performance Objective	Learning Activities	Evaluation	Resources
Given sod on pallets to be loaded, unloaded or relocated, and a tractor with hydraulic fork lift, handle the pallets as required. For satisfactory performance, pallets must be picked up and handled gently with very little, if any, loss of sod from pallets in the process, and operation must meet instructor approval.	1) Read appropriate selections from Master Resource List	1) Notes	Selections from Master Resource List
	2) Review Manufacturer's Operating Instructions	2) Notes/Ability to operate equipment properly and safely	Manufacturer's Operating Instructions
	3) Demonstration - sod farm fork lift operation	3) Attendance	Performance Guide
	4) Complete Performance Objective	4) Performance Guide/ Instructor Approval	

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Performance Guide

OPERATE A FORK LIFT

1. Perform service check on fork lift tractor.

2. Start motor and check all adjustments and the operating order of different mechanisms, especially the hydraulic system of the fork lift.

3. Adjust hydraulic system to meet the needs and conditions for the job which is to be done.

4. Move the pallets of sod.

5. Return tractor and fork lift unit to storage area when the job is finished.

Maintenance

• Repair Pallets, *page 140*

Turfgrass Unit: MAINTENANCE

Competency Task: REPAIR PALLETS

Performance Objective	Learning Activities	Evaluation	Resources
Given a supply of lumber, nails, standard sized pallets needing repair, and the necessary tools, make the needed repairs to the pallets. For satisfactory performance, pallets must be neat and smooth when repairs have been made and repairs must meet instructor approval.	1) Read appropriate selections from Master Resource List 2) Review carpentry/construction references 3) Complete Performance Objective	1) Notes 2) Notes 3) Performance Guide/ Instructor Approval	Selections from Master Resource List Carpentry/Construction References Performance Guide

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1. Check each individual pallet to determine the nature and extent of repairs needed.

2. Select board, nails, and carpentry tools necessary for making the repairs.

3. Take off broken boards and pull out nails.

4. Cut new boards to replace those that were broken and nail in place.

5. Pick up scraps of lumber and left over materials.

6. Clean carpentry tools, following use and use a clean, dry cloth to apply thin coat of oil to the metallic portions of tools as a precaution against rusting and corrosion.

7. Return tools to their designated storage place when pallets have been repaired.